

AD-A080 868

FOREST PRODUCTS LAB MADISON WI F/6 2/6
WOOD ANATOMY OF THE NEOTROPICAL SAPOTACEAE. XI. PRIEURELLA. (U)
1979 B F KUKACHKA

UNCLASSIFIED FSRP-FPL-352

NL

1 06 1
AL
AUS0068



END
DATE
FILMED
3-80
DRC

DDC FILE COPY

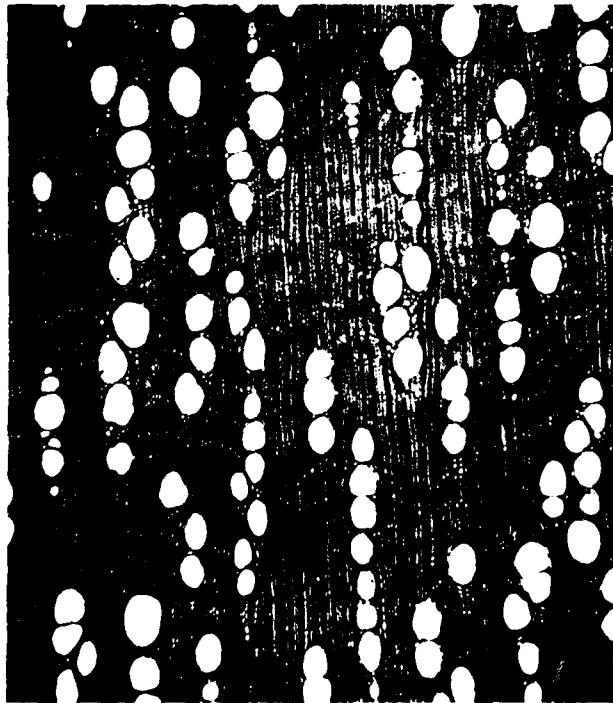
ADA 080868

**Wood Anatomy
of the
Neotropical Sapotaceae.
XI. Priurella.**

Research Paper FPL 352

U. S. Department of Agriculture
Forest Service
Forest Products Laboratory

1979



12

LEVEL

DTIC
ELECTE
FEB 21 1980

A

86 2 19

311700

Abstract

Priurella currently consists of seven South American species. The best known, and most abundantly collected species are *P. cuneifolia* (Rudge) Pierre and *P. priurii* (A. DC.) Aubr. Since 1964 five additional species have been described by Aubreville: *colombiana*, *lanceolata*, *maguirei*, *manaosensis*, and *wurdackii*. For many decades the original species were maintained under *Chrysophyllum* until Pierre established the genus *Priurella* in 1891. The wood anatomy substantiates the separation from *Chrysophyllum*.

Preface

The Sapotaceae form an important part of the ecosystem in the neotropics; for example, limited inventories made in the Amazon Basin indicate that this family makes up about 25 percent of the standing timber volume there. This would represent an astronomical volume of timber but at present only a very small fraction is being utilized. Obviously, better information would help utilization--especially if that information can result in clear identification of species.

The Sapotaceae represent a well-marked and natural family but the homogeneous nature of their floral characters makes generic identification extremely difficult. This in turn is responsible for the extensive synonymy. Unfortunately, species continue to be named on the basis of flowering or fruiting material alone and this continues to add to the already confused state of affairs.

This paper on *Priurella* is the eleventh in a series describing the anatomy of the secondary xylem of the neotropical Sapotaceae. The earlier papers, all by the same author and under the same general heading, include:

- I. *Bumelia*--Research Paper FPL 325
- II. *Mastichodendron*--Research Paper FPL 326
- III. *Dipholis*--Research Paper FPL 327
- IV. *Achrouteria*--Research Paper FPL 328
- V. *Calocarpum*--Research Paper FPL 329
- VI. *Chloroluma*--Research Paper FPL 330
- VII. *Chrysophyllum*--Research Paper FPL 331
- VIII. *Diploon*--Research Paper FPL 349
- IX. *Pseudoxythece*--Research Paper FPL 350
- X. *Micropholis*--Research Paper FPL 351

Publication in this manner will afford interested anatomists and taxonomists the time to make known their opinions and all such information is hereby solicited. At the termination of this series the data will be assembled into a single comprehensive unit.

WOOD ANATOMY OF THE NEOTROPICAL SAPOTACEAE

XI. PRIEURELLA

B. F. Kukachka,^{1/} Botanist

Forest Products Laboratory,^{2/} Forest Service
U.S. Department of Agriculture

Introduction

Prieurella, established by Pierre in 1891, is a small South American genus consisting of seven species. The best known species are *P. cuneifolia* (Rudge) Pierre, the type of the genus, and *P. pricurii* (A. DC.) Aubr. The nomenclatural history of these species is as follows:

Prieurella cuneifolia (Rudge) Pierre

Bumelia cuneifolia Rudge (1805)
Chrysophyllum cuneifolium (Rudge) A. DC. (1844)
Prieurella cuneifolia (Rudge) Pierre (1891)
Ecclinusa cuneifolia (Rudge) Aubr. (1961)

Prieurella pricurii (A. DC.) Aubr.

Chrysophyllum pricurei A. DC. (1844)
Ecclinusa pricurii (A. DC.) Aubr. (1961)
Prieurella pricurii (A. DC.) Aubr. (1964)
Chrysophyllum cyanogenum Ducke (1942) (8)

Bachni (5) maintained *pricurii* in *Chrysophyllum* and *cuneifolia* as the sole member of *Prieurella*, but later (6), he placed *pricurii* in *Prieurella*.

Cronquist (7) maintained both species under *Chrysophyllum*. In 1961 Aubreville (1) transferred both species to *Ecclinusa* but later (2) reinstated them in *Prieurella*. Since 1964 Aubreville has described five additional species: *wurdackii* from Peru; *manaosensis* (2) from Brazil; *lanceolata* and *maguirei* (4) from Venezuela; *colombiana* (3) from Colombia. These five species are known from a very small number of herbarium collections and only one wood specimen, from a small branch of *wurdackii*.

1/ Pioneer Research Unit, Forest Products Laboratory.

2/ Maintained at Madison, Wis., in cooperation with the University of Wisconsin, Madison.

From the anatomical viewpoint *Prieurella* is very distinct from *Chrysophyllum* and these genera can be separated by hand lens examination of the cross-section. *Prieurella*'s nearest affinity appears to be with certain species of *Neoxythece*.

Description

Based on seven mature specimens of *cuneifolia* and 14 mature specimens of *prieurii*. The single specimen of *wurdackii* was represented by a branch section 2.5 cm. in diameter (table 1).

General: Sapwood yellow-brown; 3-4 (6) cm thick and distinct from the brown heartwood. Sapwood color commonly obscured by the presence of bluestain fungi. Growth rings indistinct or lacking. Wood hard and heavy with a specific gravity range of 0.85 to 1.12. Bark 3-6 mm thick in *prieurii* and 1-3 mm thick in *cuneifolia*.

Anatomical:

Pores solitary and in radial multiples of 2-3(4) which are in radial-echelon arrangement. Maximum tangential pore diameter of *cuneifolia* specimens ranges from 118 to 150 μ m; in *prieurii* from 158 to 205 μ m; 197 μ m in *wurdackii*.

Parenchyma banded; the individual bands irregularly 1-3 seriate and sometimes discontinuous (figs. 1-4). Silica present in cells with dark contents.

Vessel members averaging 760 μ m in *prieurii* and slightly longer, 820 μ m in *cuneifolia*. Intervessel pitting 4-6 μ m in diameter. Tyloses, when present, may be thin-walled, thick-walled, or commonly sclerotic in the heaviest specimens. Perforations simple.

Wood rays essentially uniseriate; heterocellular. Vessel-ray pitting irregular in shape and size. Spheroidal silica particles common and generally confined to the ray cells with other contents; up to 25 μ m in diameter (Fig. 5). Ray cell contents in *prieurii* generally granular in appearance in contrast with the large brown globules of *cuneifolia*. (figs 5-6).

Wood fibers thick-walled; averaging 1.48 mm in *prieurii* and 1.51 mm in *cuneifolia*. Vascular tracheids common.

Silica content of the nine specimens subjected to chemical analysis ranged from 0.14 to 0.89 percent (table 2).

Diagnostic features: Sapwood yellowish-brown, heartwood dark brown. Wood hard, heavy with an average specific gravity near 1.0. Pores in radial-echelon arrangement. Parenchyma banded; 1-3 seriate (sometimes discontinuous). Intervessel pitting 4-6 μ m in diameter. Rays essentially uniseriate. Silica present. Vascular tracheids common. Distinctive brown, spheroidal globules in the rays of *P. cuneifolia*.

Notes

P. cuneifolia may be confused with certain specimens of *Neoxythece* with uniseriate rays and small pores. In these specimens of *Neoxythece* the sapwood is always a light brown, the intervessel pits are 6-8 μ m in diameter, and the wood rays lack the distinctive dark brown globules.

1. Name of plant	
2. Locality	
3. Date	
4. Collector	
5. Number	
6. Height	
7. Habitat	
8. Use	
9. Remarks	
Disc	continued or special

Literature Cited

1. Aubreville, A.
1961. Notes sur les Sapotaceae Africaines et Sud-Américaines.
Adansonia 1(1):20.
2. Aubreville, A.
1964. Notes sur des Sapotaceae. III. Rehabilitation des genres
Américaines Ragala Pierre et Pricurella Pierre. Adansonia
IV(3):369-371.
3. Aubreville, A.
1967. Sapotaceae nouvelles de la cote Colombienne du Pacifique.
Adansonia 7(2):143-144.
4. Aubreville, A.
1972. Sapotaceae in Botany of the Guyana Highland. IX. Bassett
Maguire and Collaborators. Memoirs New York Bot. Gard. 23:217-218.
5. Baehni, Charles.
1965. Memoires sur les Sapotaceae. III. Inventaire des genres.
Boissiera 11:74-77.
6. Baehni, Charles and Luciano Bernardi.
1970. Sapotaceae in Flora of Peru. Field Mus. Nat. Hist. XIII
(Part V-A, No. 2):172-173.
7. Cronquist, Arthur.
1946. Studies in the Sapotaceae. V. The South American species
of Chrysophyllum. Bull. Torrey Bot. Club 73(3):286-311.
8. Ducke, Adolpho.
1942. New and Noteworthy Sapotaceae of Brazilian Amazonia.
Tropical Woods 71:18-20.

U.S. Forest Products Laboratory.

Wood anatomy of neotropical Sapotaceae:
XI. Prieurella, by B. F. Kukachka, Res. Pap.
FPL 352, FPL, For. Serv., USDA. 9 p.
Madison, Wis.

Prieurella currently consists of seven South American species. The best known and most abundantly collected are P. cuneifolia (Rudge) Pierre and P. prieurii (A. DC.) Aubr. Since 1964 five additional species have been described by Aubreville. The original species were maintained under Chrysophyllum until Pierre established the genus Prieurella in 1891. The wood anatomy substantiates the separation from Chrysophyllum.

U.S. Forest Products Laboratory.

Wood anatomy of neotropical Sapotaceae:
XI. Prieurella, by B. F. Kukachka, Res. Pap.
FPL 352, FPL, For. Serv., USDA. 9 p.
Madison, Wis.

Prieurella currently consists of seven South American species. The best known and most abundantly collected are P. cuneifolia (Rudge) Pierre and P. prieurii (A. DC.) Aubr. Since 1964 five additional species have been described by Aubreville. The original species were maintained under Chrysophyllum until Pierre established the genus Prieurella in 1891. The wood anatomy substantiates the separation from Chrysophyllum.

U.S. Forest Products Laboratory.

Wood anatomy of neotropical Sapotaceae:
XI. Prieurella, by B. F. Kukachka, Res. Pap.
FPL 352, FPL, For. Serv., USDA. 9 p.
Madison, Wis.

Prieurella currently consists of seven South American species. The best known and most abundantly collected are P. cuneifolia (Rudge) Pierre and P. prieurii (A. DC.) Aubr. Since 1964 five additional species have been described by Aubreville. The original species were maintained under Chrysophyllum until Pierre established the genus Prieurella in 1891. The wood anatomy substantiates the separation from Chrysophyllum.

U.S. Forest Products Laboratory.

Wood anatomy of neotropical Sapotaceae:
XI. Prieurella, by B. F. Kukachka, Res. Pap.
FPL 352, FPL, For. Serv., USDA. 9 p.
Madison, Wis.

Prieurella currently consists of seven South American species. The best known and most abundantly collected are P. cuneifolia (Rudge) Pierre and P. prieurii (A. DC.) Aubr. Since 1964 five additional species have been described by Aubreville. The original species were maintained under Chrysophyllum until Pierre established the genus Prieurella in 1891. The wood anatomy substantiates the separation from Chrysophyllum.

Table 1.--Specimens of Priourella examined

Species	Collector and number	Origin	Wood specimens
<u>cuneifolia</u> (Rudge) Pierre	BAFOG 186 M Lanjouw & Lindeman 2977 Lindeman 3658 Maguire 24687 Schulz 7413 Schulz 7450 Stahel 177	French Guiana Surinam Surinam Surinam Surinam Surinam Surinam	MAD-32958 MAD-32924 MAD-32932 MAD-12071 MAD-32945 MAD 32949 SJR-42458
<u>prieurii</u> (A. DC.) Rubr.	BAFOG 86 M BAFOG 233 M BAFOG 1210 M Ducke 813 Froes 12 Gutierrez 60 & 114 Lanjouw & Lindeman 396 Oliveira 5785 A Oliveira 5785 B Oliveira 5801 D Pires 51794 Rodrigues & Chagas 2927 Rosa 1398 Williams 14550	French Guiana French Guiana French Guiana Brazil Brazil Peru Surinam Brazil Brazil Brazil Brazil Brazil Brazil Venezuela	MAD 32956 MAD 50850 MAD-32963 SJR-44304 A-27462 MAD-22360 MAD-32853 MG-5785 A MG-5785 B MG-5801 D MAD-21487 INPA-1030 MG-1398 SJR-41625
<u>wurdackii</u> Aubr.	Schunke 2592	Peru	MAD-35644

Table 2.--Silica content¹ of *Pitheurella*

Species	Specimen analyzed	Origin	Percent silica
<i>cuneifolia</i>	Lindeman 3658	Surinam	0.28
	Stahel 177	Surinam	.47
	Schulz 7413	Surinam	.89
	Schulz 7450	Surinam	.14
<i>prieuri</i>	BAFOG 86 M	French Guiana	0.37
	BAFOG 233 M	French Guiana	.58
	Ducke 813	Brazil	.68
	Pires et al. 51794	Brazil	.61
	Williams 14550	Venezuela	.79

1. The author is indebted to Martin F. Wesolowski for the chemical analysis.

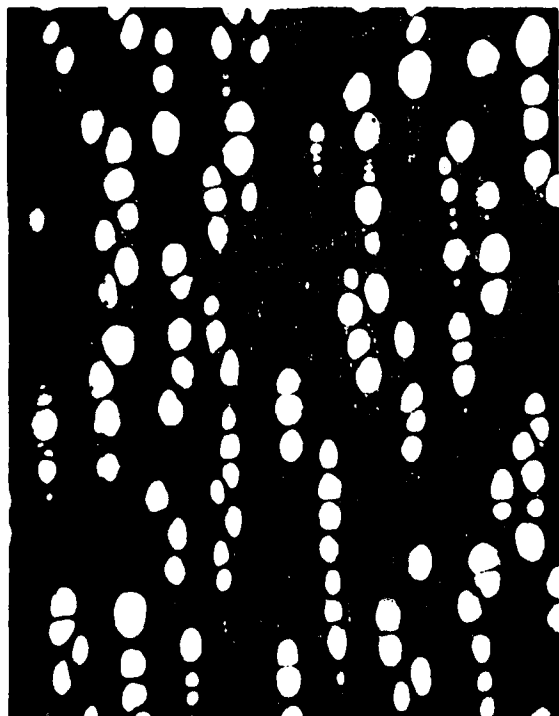


Figure 1.--*Prieurella prieurii*, typical arrangement of pores and parenchyma (Ducke 813) X 30.

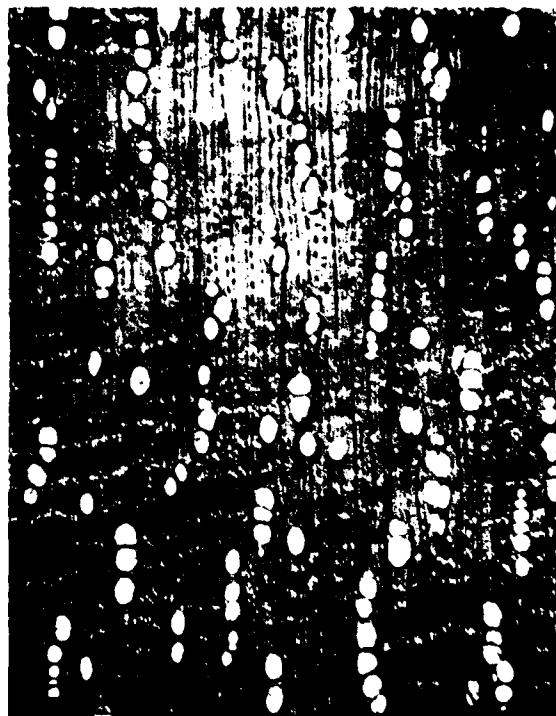


Figure 2.--*P. cuneifolia*, typical arrangement of pores and parenchyma (Stahel 177).

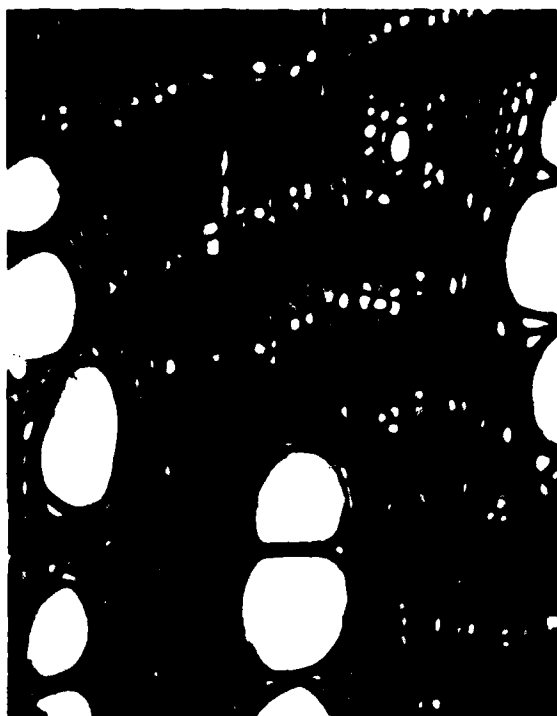


Figure 3.--*P. prieurii*, parenchyma detail (Ducke 813) X 110.

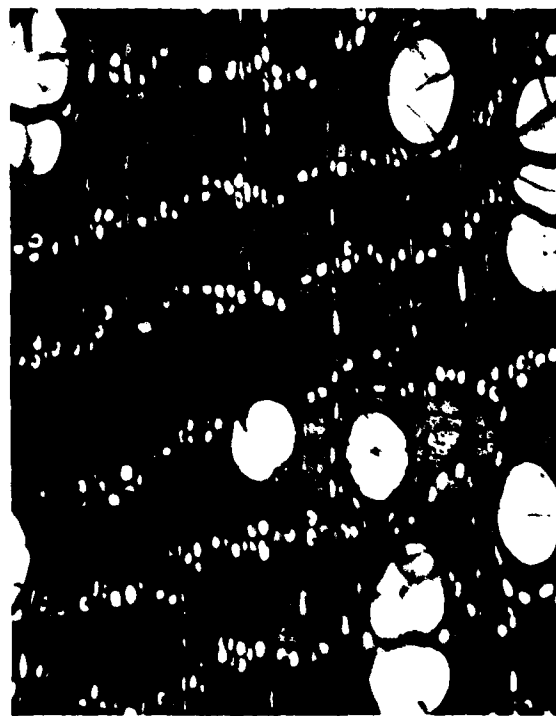


Figure 4.--*P. cuneifolia*, parenchyma detail (Stahel 177) X 110.

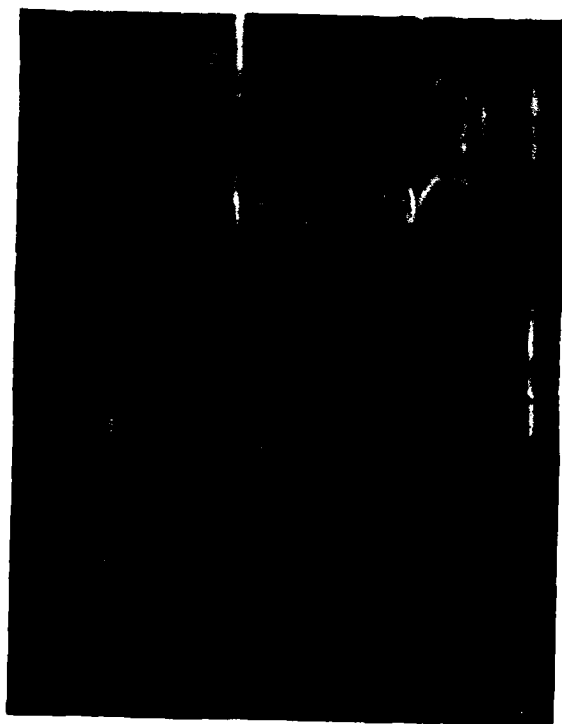


Figure 5.--*P. prieurii*, wood rays with granular appearing contents and large spheroidal particles of silica (BAFOG 86M) X 440.



Figure 6.--*P. cuneifolia*, wood rays with distinctive brown, organic spheroids. Silica particles smaller (Schulz 7450) X 440.

2.5-9-12-79